

CLAIMS

5 What is claimed is:

1. A pneumatic assembly for a paintball gun, comprising:
 a pneumatic piston slidably mounted in a cylinder, the cylinder configured to receive
compressed gas and to supply the compressed gas to the pneumatic piston to control movement
of the pneumatic piston;
10 a bolt coupled to the pneumatic piston, said bolt comprising a port disposed through a
lateral sidewall at a predetermined location along the bolt; and
 a sealing member arranged in communication with the bolt, wherein the sealing member
is configured to prevent compressed gas from escaping from the paintball gun through the bolt
when the bolt is in a first position and such that compressed gas can be released from the
15 paintball gun through the bolt when the bolt is in a second position.

2. A pneumatic assembly according to claim 1, further comprising a valve stem,
wherein the bolt is slidably mounted on the valve stem and wherein the sealing member is
arranged on the valve stem in communication with an inner surface of the bolt.
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3. A pneumatic assembly according to claim 2, wherein compressed gas is supplied
from a compressed gas source to a compressed gas storage chamber through a passageway in
the valve stem.

- 25 4. A pneumatic assembly according to claim 1, wherein a sealing member is
configured to selectively prevent compressed gas from entering a compressed gas storage
chamber.

- 30 5. A pneumatic assembly according to claim 1, further comprising a compressed
gas storage area, wherein the compressed gas storage area is configured to selectively receive a
supply of compressed gas, and to selectively supply compressed gas to the forward end of the
bolt through the bolt port.

6. A pneumatic assembly according to claim 1, wherein one or more bolt ports are configured to enable compressed gas from an intermediate area between the bolt and a valve stem to supply compressed gas to the bolt during a firing operation.

5 7. A pneumatic assembly according to claim 1, wherein the bolt port comprises a length greater than a width of the sealing member.

8. A pneumatic assembly according to claim 1, wherein compressed gas is supplied to a compressed gas storage area through an input port located near a forward end of the
10 pneumatic assembly.

9. A pneumatic assembly according to claim 8, wherein compressed gas supplied to the compressed gas storage area assists in opening the bolt.

15 10. A bolt for a paintball gun, comprising:
a piston member arranged on an external surface of the bolt, wherein said piston member is configured to communicate with compressed gas supplied to a pneumatic cylinder to operate the bolt; and
a plurality of bolt ports arranged through a lateral sidewall of the bolt and configured to
20 selectively transfer compressed gas from a compressed gas storage area to an internal area of the bolt for release from the bolt.

11. A bolt according to claim 10, further comprising an intermediate area located within the bolt between the bolt and a bolt guide, further comprising one or more bolt ports
25 configured to communicate compressed gas from the intermediate area into the compressed gas storage area when the bolt is in a firing position.

12. A bolt according to claim 10, wherein one or more of the bolt ports are configured to extend beyond opposing sides of a sealing member on a bolt guide when the bolt
30 is in a forward position.

13. A bolt according to claim 10, further comprising a sealing member arranged on the external bolt surface, wherein the sealing member is configured to substantially prevent a flow of compressed gas from a compressed gas source into the compressed gas storage area when the bolt is in a forward position.

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14. A bolt according to claim 13, wherein the sealing member is further configured to assist in a loading operation of the paintball gun.

15. A bolt according to claim 10, wherein one or more of the bolt ports
10 communicate compressed gas into the compressed gas storage area during a loading operation and wherein one or more of the bolt ports vent compressed gas from the compressed gas storage area during a firing operation.

16. A paintball gun, comprising:
15 a body;
a compressed gas storage area arranged within the body;
a bolt slidably arranged within the body, said bolt comprising a bolt port disposed through a lateral sidewall of the bolt, wherein said bolt port is configured to selectively transmit compressed gas from the compressed gas storage into a forward area of the bolt to launch a
20 paintball from the paintball gun; and
a first sealing member arranged in communication with a lateral sidewall of the bolt, wherein the sealing member is configured to prevent compressed gas from entering the forward area of the bolt when the bolt is in a loading position.

25 17. A paintball gun according to claim 16, wherein the first sealing member is further configured to at least substantially prevent compressed gas from entering the compressed gas storage chamber from a compressed gas source when the bolt is in a firing position.

30 18. A paintball gun according to claim 16, further comprising a second sealing member configured to at least substantially prevent compressed gas from entering the compressed gas storage chamber from a compressed gas source when the bolt is in a firing position.

19. A paintball gun according to claim 18, wherein the second sealing member is arranged on an external surface of the bolt.

5 20. A paintball gun according to claim 19, wherein compressed gas applied to the second sealing member assists in opening the bolt.